IN THE CLAIMS

1. (Currently Amended) A method for selective sintering and consolidating of a powder, comprising the steps of:

spreading a layer of a powder blend on a platform, said powder blend comprising:

a base metal of titanium or alloy thereof, the base metal having a first melting temperature, and

an alloying metal having a second melting temperature lower than said first melting temperature,

wherein the base metal and alloying metal are selected, and quantitatively included in the powder blend, based on a characteristic of the base metal to dissolve in but not react with the ~~liquid~~ alloying metal when the alloying metal is liquefied at an annealing temperature between the first and second melting temperatures, and wherein said powder blend does not include a carbon-based polymer;

directing an energy beam onto selected areas of the layer of the ~~said~~ powder blend ~~layer~~ and thereby melting said alloying metal; and

re-solidifying said alloying metal by withdrawing said energy beam from said powder blend layer, and thereby binding said base metal or alloy thereof with said alloying metal in a metallic mixture; and

heating the metallic mixture at a temperature sufficient to melt said alloying metal and dissolve the base metal therein to form a hyper-eutectic liquid composition.

2. (Original) The method according to claim 1, wherein said alloying metal comprises elemental tin.

3. (Original) The method according to claim 2, wherein said tin is included in said powder at a concentration ranging between about 5 wt.% and about 15 wt.%.

4. (Original) The method according to claim 2, wherein said step of directing an energy beam heats said selected areas of said powder blend to a temperature less than about 1700 °F.

5. (Original) The method according to claim 2, wherein said step of directing an energy beam heats said selected areas of said powder blend to about 449 ºF.

6. (Currently Amended) The method according to claim 1, wherein said alloying metal comprises a Ti-Cu-Ni alloy at a concentration ranging between about 10 wt.% and about 30 wt.% of the powder blend, said Ti-Cu-Ni alloy being about 15 wt. % Ni and about 15 wt. % Cu, with the balance being Ti.

7. (Original) The method according to claim 6, wherein said step of directing an energy beam heats said selected areas of said powder blend to about 1700 ºF.

8. (Canceled).

9. (Currently Amended) A method for fabricating a metal part, comprising the steps of:

spreading a layer of a powder blend ~~on a platform~~, said powder blend comprising:

a base metal of titanium or alloy thereof, and

an alloying metal having a lower melting temperature than that of said base metal,

wherein said powder blend does not include a carbon-based polymer;

melting selected areas of said alloying metal by directing an energy beam onto selected areas of said spread layer of the powder blend ~~layer~~;

re-solidifying said alloying metal into a solid layer ~~by withdrawing said energy beam from said powder blend layer, and~~ thereby binding said base metal or alloy thereof with said alloying metal;

spreading a next layer of powder blend on top of the solid layer;

building up a preform of the metal part by iteratively performing said steps of ~~spreading,~~ melting, ~~and~~ re-solidifying, and spreading of a next layer ~~steps on~~ so as to form additional ~~adjacently formed~~ stacked ~~powder blend~~ solid layers;

heating the preform part at a temperature sufficient to melt said alloying metal and dissolve the base metal therein to form a hyper-eutectic liquid composition; and

continuing to heat the hyper-eutectic liquid composition until it solidifies.

10. (Original) The method according to claim 9, wherein said alloying metal comprises elemental tin.

11. (Original) The method according to claim 10, wherein said tin is included in said powder at a concentration ranging between about 5 wt.% and about 15 wt.%.

12. (Original) The method according to claim 11, wherein said step of directing an energy beam heats said selected areas of said powder blend to a temperature less than about 1700 °F.

13. (Original) The method according to claim 11, wherein said step of directing an energy beam heats said selected areas of said powder blend to about 449 °F.

14. (Currently Amended) The method according to claim 9, wherein said alloying metal comprises a Ti-Cu-Ni alloy at a concentration ranging between about 10 wt.% and about 30 wt.% of the powder blend, said Ti-Cu-Ni alloy being about 15 wt. % Ni and about 15 wt. % Cu, with the balance being Ti.

15. (Original) The method according to claim 14, wherein said step of directing an energy beam heats said selected areas of said powder blend to about 1700 °F.

16. (Canceled).

17. (Original) The method according to claim 9, wherein each of said powder blend layer is between about 0.010 inch and 0.002 inch in thickness.

18. (Original) The method according to claim 9, further comprising:

performing a hot isostatic pressure process on said metal part after performing said metal liquid phase sintering and isothermal solidification process, and thereby causing said metal part to have a substantially homogenous structure.

19. (Original) The method according to claim 18, wherein said hot isostatic pressure process is performed at about 1800 °F in an inert environment at about 1500 psi.

20. (Currently Amended) A powder blend for forming metallic parts in a layer-by-layer stacking technique with each layer of said metallic parts being formed in accordance with a CAD file, the powder blend comprising:

a base metal of titanium or alloy thereof, the base metal having a first melting temperature; and

an alloying metal having a second melting temperature lower than said first melting temperature, said alloying metal comprises a Ti-Cu-Ni alloy at a concentration ranging between about 10 wt. % and about 30 wt.% of the powder blend, said Ti-Cu-Ni alloy being about 15 wt. % Ni and about 15 wt. % Cu, with the balance being Ti,

wherein the base metal and alloying metal are selected based on a characteristic of the base metal to dissolve in but not react with the liquid alloying metal at an annealing temperature between the first and second melting temperatures.

21 to 23. (Canceled).

24. (Original) The powder blend according to claim 20, wherein said powder blend does not include a carbon-based polymer.